



Virginia



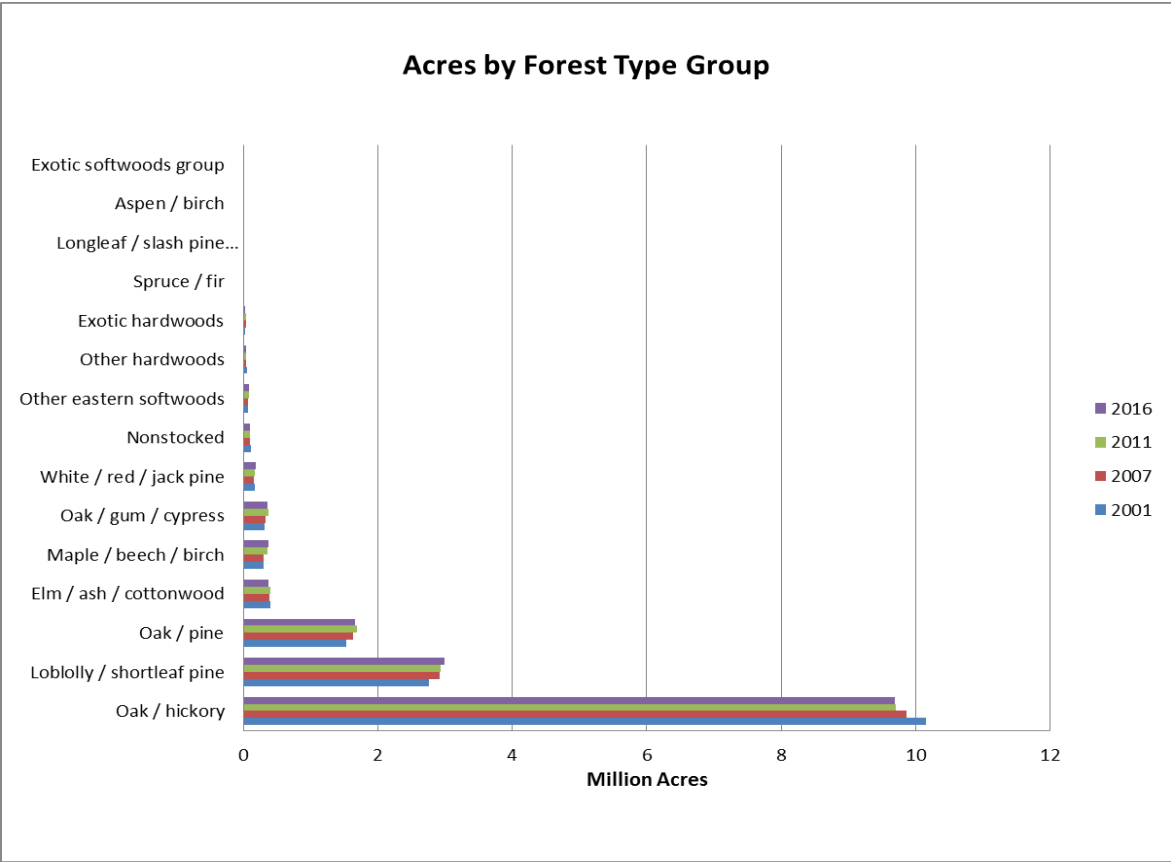
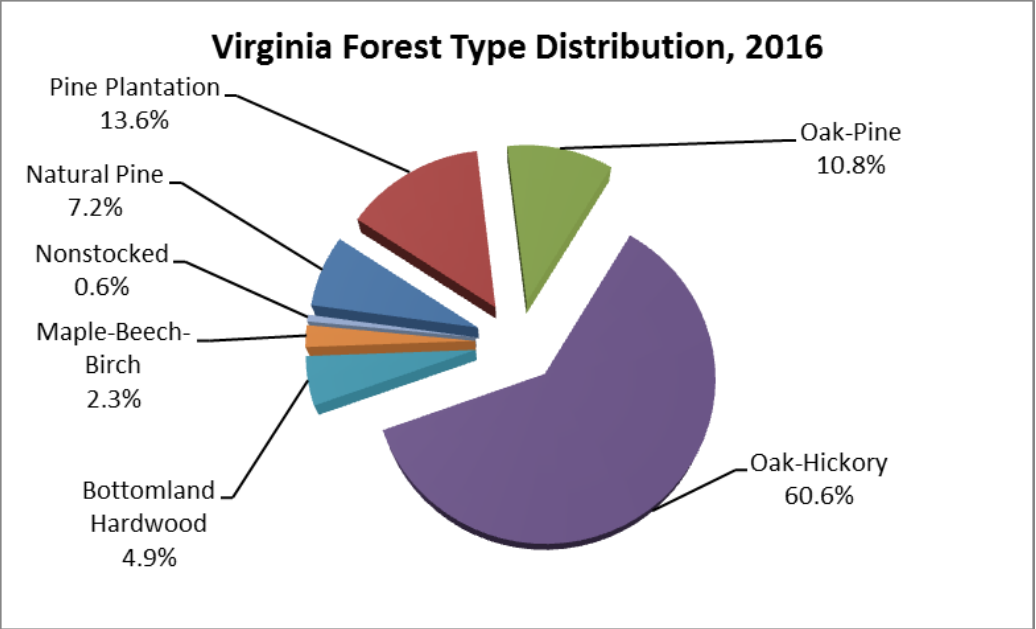
Forest Health Highlights 2018



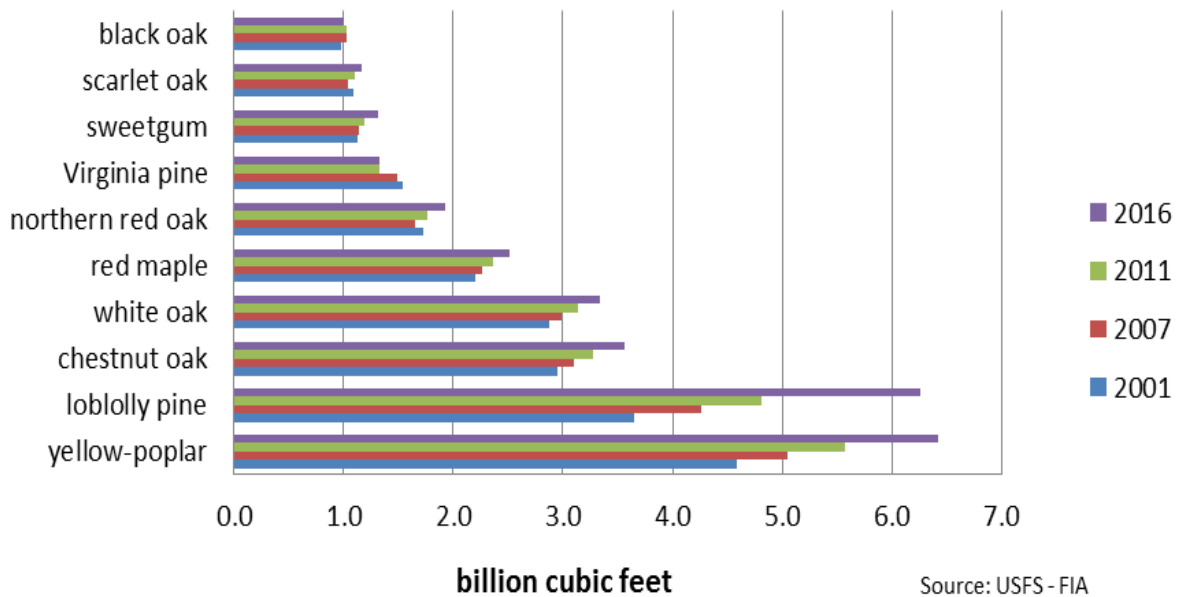
The Resource:

Virginia's forests are well known for their diversity, beauty, ecological and economic value. The Commonwealth has over 16 million acres classified as forestland, 80 percent of which is owned by nonindustrial private landowners. One percent of forest is on lands owned by forest industries and the remaining 19 percent is on public lands. There is an estimated 11.4 billion trees in Virginia's forests with diameters greater than or equal to one inch, and over 100 documented species of live trees. Yellow-poplar, loblolly pine, chestnut oak, and white oak are the most abundant in terms of standing volume, but red maple ranks most abundant by number of stems. The forest land in Virginia is categorized into forest-type groups and the oak-hickory forest type is most common (~60%), followed by planted pine (~13%) and oak-pine (~10%). The diversity found within Virginia's forests contributes to the challenges and rewards of managing this valuable resource. The area of large diameter forests, both southern pine and hardwood, has increased since 2001, versus the area of small diameter forests which has decreased. This trend indicates that the practice of clearcutting has declined and fewer new stands are being established. Virginia's forests are impacted by a number of forest health disturbances including invasive plants, insect pests, and diseases, some of which are described below. The Virginia Department of Forestry strives to protect and develop healthy, sustainable forest resources for Virginians.

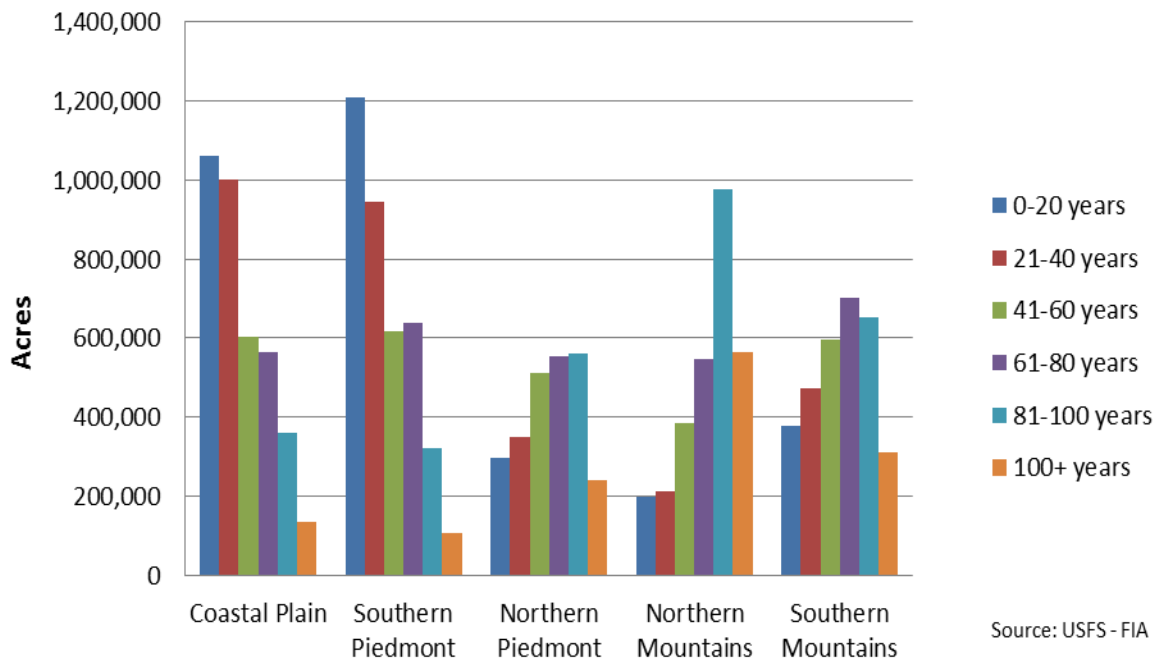
Source: Brandeis, T.J.; Hartsell, A.J.; Randolph, K.C.; Oswalt, C.M. 2018. Virginia's Forests, 2016. Resour. Bull. SRS-223. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 99 p.



Top 10 Tree Species by Volume



Forest Land Area by Survey Unit & Age Class, 2016



Forest Health Influences and Programs:

Southern Pine Beetle- Virginia has seen very little southern pine beetle (SPB) damage in recent years, but the Virginia Department of Forestry (VDOF) continues to survey for the beetle every spring. In April of 2018, twenty four pheromone baited funnel traps were deployed across ten counties to monitor SPB populations. Very few southern pine beetles were caught and the results of this year's survey indicate that SPB populations in Virginia are at low, static levels. Although there has been very little SPB activity in Virginia for many years, there was a recent outbreak on Chincoteague Island on the Eastern Shore of Virginia. This outbreak was first documented in 2012 and widespread pine mortality was evident on the Eastern Shore in 2014 and 2015. Beetle activity began to decline in 2016 and 2017, and an aerial survey was conducted in 2018 to map pine mortality. Pines in this area have reached mature ages, have received little to no management, and are stressed because of saltwater intrusion - the perfect conditions for a southern pine beetle outbreak. VDOF forest health staff mapped 475 acres of pine mortality on Chincoteague Island and Chincoteague National Wildlife Refuge in 2018 but did not observe any active spots. While it appears that the SPB outbreak has run its course, the island is left with hundreds of acres of standing dead pine.

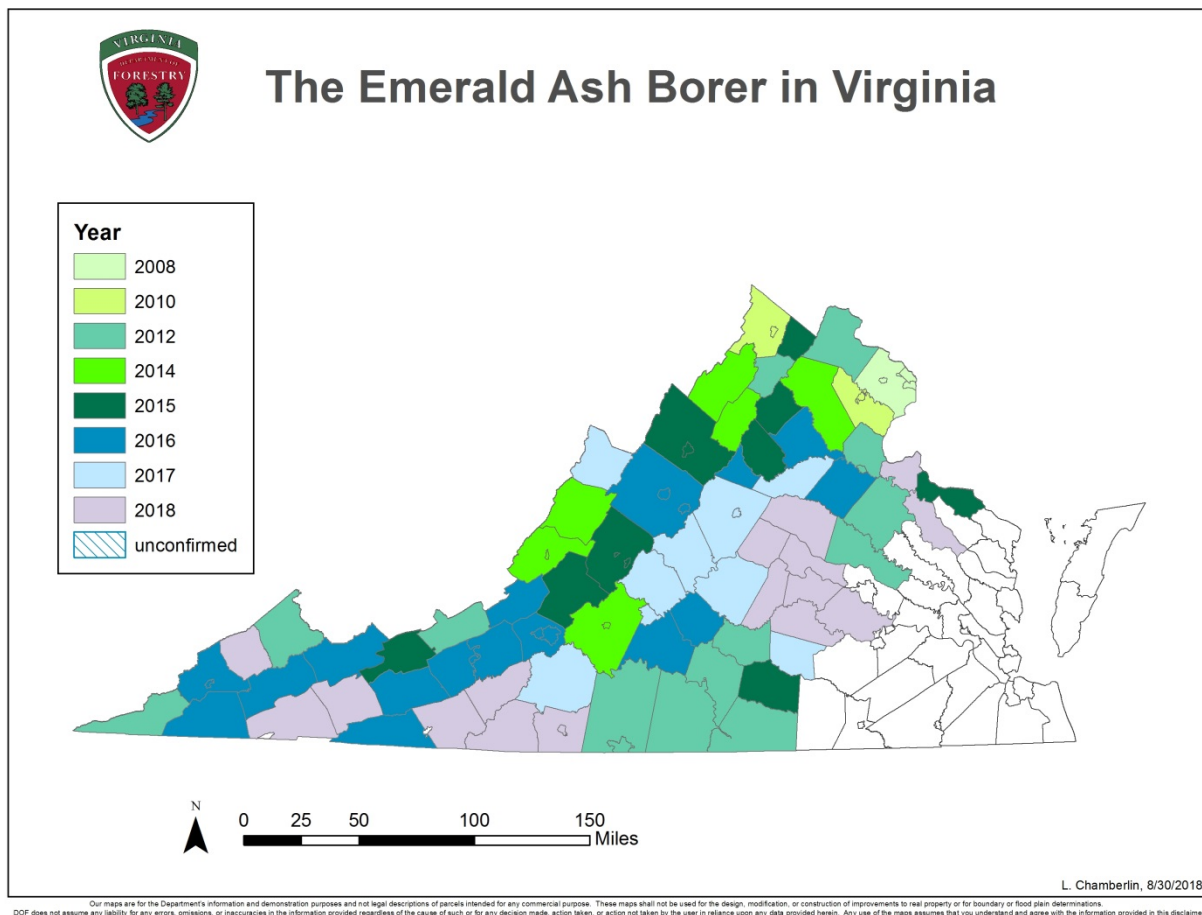


Above: Aerial survey over Chincoteague, October 2018

Below: Pine mortality on Chincoteague National Wildlife Refuge, August 2018



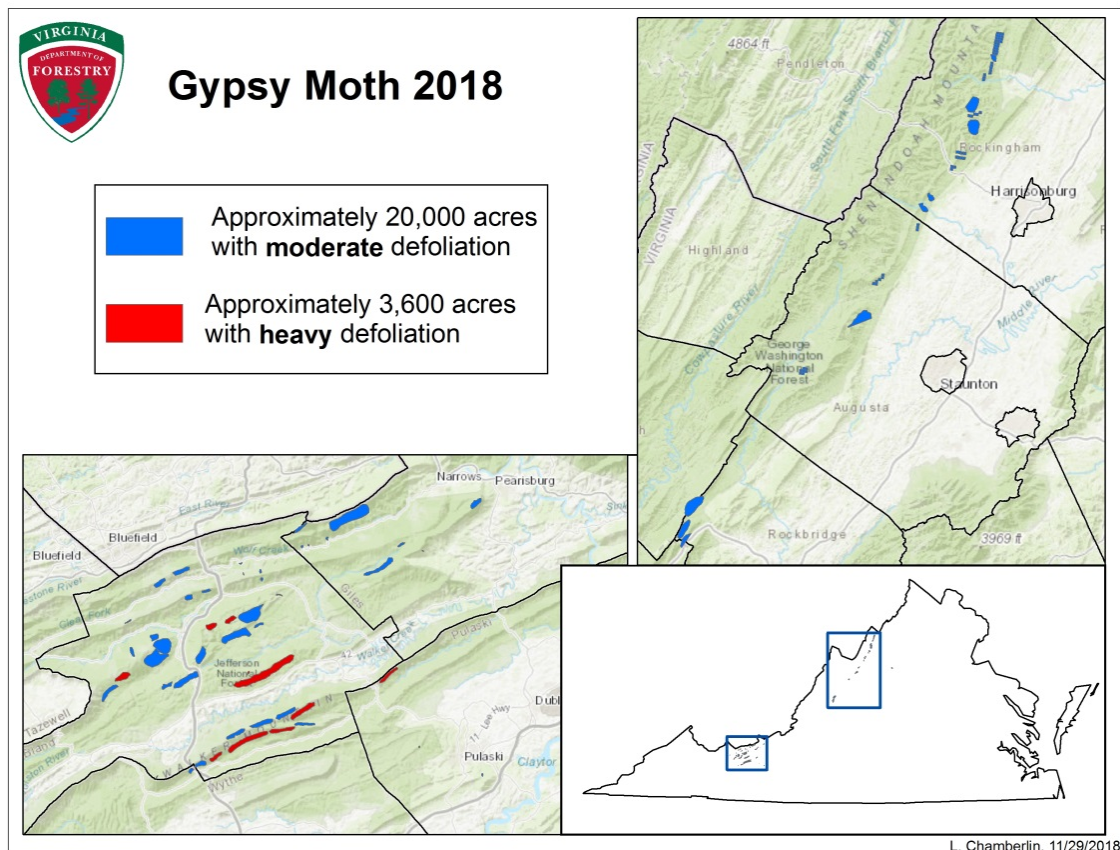
Southern Pine Beetle Prevention Program- The Virginia Department of Forestry offers three cost share programs to assist residents of Virginia and minimize the risk of a SPB outbreak: pre-commercial pine thinning for landowners, first commercial pine thinning for loggers, and longleaf restoration for landowners. The Virginia Pine Bark Beetle Prevention Program continues to be supported by USFS Forest Health Protection Southern Pine Beetle Program funds. At the time of this report, Virginia has thinned over 60,000 acres of pine (mostly pre-commercial) through such cost share programs since 2004. Thinning improves forest health and reduces a stand's susceptibility to SPB.



Emerald Ash Borer- Since 2008, the emerald ash borer (EAB) has been making its way through Virginia. In 2018, this invasive insect was discovered in 16 new counties bringing the total number of confirmed counties in Virginia to 71. Most of these newly confirmed counties were in the central and eastern part of the state (Louisa, Fluvanna, Cumberland, Goochland, Powhatan, Amelia, Chesterfield, King George, and Essex counties), however some were in western Virginia where EAB had been previously suspected but not confirmed with an insect specimen until now (Dickenson, Washington, Smyth, Henry, Patrick, Carrol, and Floyd

counties). With its presence now confirmed in over three quarters of the Commonwealth, this pest continues to be of great concern for all native species of ash statewide. In 2018 VDOF developed a new EAB program to protect ash trees. This program supports chemical and biological control on state lands, and provides financial assistance to landowners and municipalities for the treatment of high value ash trees in urban areas. The program also conducts education and outreach activities to disseminate information to landowners and foresters regarding detection and management of the emerald ash borer.

Gypsy Moth Although the gypsy moth is an invasive insect, it has been defoliating hardwoods in Virginia since the 1980s. Gypsy moth populations fluctuate between outbreak status and barely noticeable, which is determined, in part, by spring weather conditions. The fungus *Entomophaga maimaiga* kills gypsy moth caterpillars and is spread by rain. Virginia experienced an unusually wet spring in 2018 which likely contributed to the relatively low gypsy moth activity. Gypsy moth damage has been observed in southwest Virginia for the past three years, and defoliation was reported from that area again in 2018, although considerably less severe and widespread. The U.S. Forest Service mapped moderate to heavy defoliation in Bland and Giles counties, and VDOF mapped patchy moderate defoliation in the Shenandoah Mountains. In total, about 20,000 acres with moderate defoliation and about 3,600 acres with heavy defoliation were mapped during aerial surveys using Digital Mobile Sketch Mapper (DMSM) technology. Since this was the third consecutive year of defoliation in Giles and Bland counties, the cumulative stress could lead to some tree mortality.



Spotted Lanternfly- A new pest was discovered in Virginia in 2018- the spotted lanternfly, *Lycorma delicatula*. This invasive insect is native to China, India, and Vietnam, and was discovered in Frederick County, Virginia by a Virginia Department of Agriculture and Consumer Services (VDACS) inspector. The spotted lanternfly has a wide host range but tends to prefer tree of heaven, *Ailanthus altissima*. Spotted lanternflies are a type of plant hopper, meaning they have piercing sucking mouthparts and feed on phloem from the woody parts of plants. As they feed and take in sugars from the plant, lanternflies excrete honeydew, a sticky substance on which sooty mold can grow. The spotted lanternfly could cause great damage to orchards and vineyards, and the potential impact on forestry is still being assessed. After the initial detection in Virginia, surveys were conducted to delimit the area of infestation and VDACS worked with USDA APHIS to treat tree of heaven. So far this pest has not been found outside of Frederick County, but monitoring continues and outreach efforts are underway to educate Virginia residents about the importance of reporting any spotted lanternfly sightings.



Left: Spotted lanternfly nymph, fourth instar. Right: Spotted lanternfly adult.

Thousand cankers disease- The thousand cankers disease is a complex that includes the walnut twig beetle and the fungus, *Geosmithia morbida*. The disease was first detected in Virginia in June 2011 within the Richmond area, and again in 2012 in northern Virginia. Thousand cankers disease can cause severe damage to black walnut trees, but after many years of trapping and surveying it appears that the disease may not cause the anticipated widespread walnut mortality in Virginia. VDACS traps for the walnut twig beetle every year, but numbers continue to be low and there have been no new county detections in Virginia. In an effort to thoroughly monitor the originally infected counties, VDOF Forest Health staff participated in surveys where thousand cankers disease had been confirmed in the past. No signs of the disease were found in 2018. When first detected in 2011 and 2012, there was concern for the black walnut population in Virginia and quarantines were established around the infected areas in Richmond and northern Virginia. These two areas are still quarantined and trapping and monitoring efforts will continue.

Native Defoliators- Some native insects are present every year in low numbers and cause tree damage that is so minor it is rarely noticed. However, sometimes populations of these insects explode and cause significant damage for a year or two. The oak button gall and the oak sawfly are two native defoliators that were present in high numbers in 2018. The oak button gall causes damage to white oaks that can be quite alarming in times of heavy attack. It is a tiny stingless wasp in the genus *Neuroterus* and causes leaves to curl and fall off the tree. Looking at the leaves more closely reveals small “buttons”, or galls the size of sesame seeds, on the lower part of the leaf. This native pest has also been referred to as the ‘jumping oak gall’ because when the galls fall to the ground they appear to jump as they tumble down to the soil. Most reports of damage due to the oak button gall in 2018 were concentrated in the Piedmont region of Virginia, but symptomatic white oaks were seen in other parts of the state as well. The last major outbreak of this pest was noted in 2014, primarily in Northern Virginia.



Damage from oak button gall on white oak

The oak sawfly is another native defoliator of oaks that caused noticeable damage in 2018. Populations of this pest exploded in southwest Virginia where damage to red oaks has been reported for the past three years (2016 to 2018). Defoliation was observed on red oaks, mainly in the upper crown, scattered across the landscape. There are a few species of sawflies in the genus *Caliroa* that feed on oak foliage and we suspect that the species causing damage in southwest Virginia is the scarlet oak sawfly, *Caliroa quercuscoccineae*, although this has not been confirmed. Oak sawfly larvae feed in groups and skeletonize leaves by consuming the epidermis and leaving only a transparent network of veins. While local outbreaks of the oak button gall and the oak sawfly can cause unsightly damage, outbreaks are generally short-lived with minimal long-term damage.

Abiotic Factors- The year 2018 was unusually wet; NOAA reported 52 inches of rain in Richmond from January to October, which is more than 16 inches above normal (https://www.weather.gov/akq/cli_archive). Additionally, there were quite a few abnormal fluctuations between warm and cool temperatures within seasons. The winter of 2017/2018 was cold with some irregular weather patterns including periods of warmer-than-usual temperatures followed by more freezing temperatures. This temperature fluctuation caused freeze damage on young loblolly pine. Tip dieback was observed in the spring and pine seedling mortality was documented on multiple tracts. There were also reports of oak damage in high elevation areas in southwest Virginia which may be the result of a late frost. Only a few incidents of high wind were reported, and such reports were localized and small in scale.

Forest Health Assistance in Virginia:

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